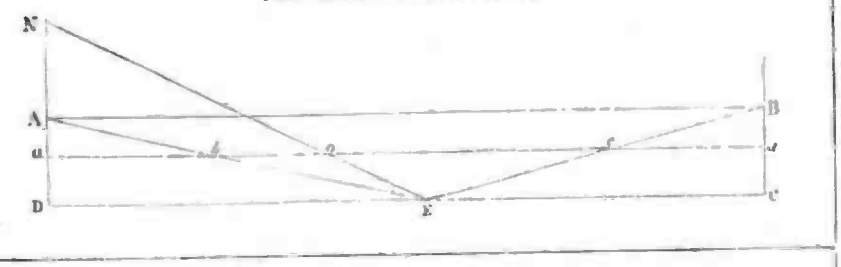
THE GIRDER QUESTION.



Sir,—I have read with great interest the reports on the girder that have lately appeared in The Builder, and having paid considerable attention both to the practical construction and theoretical investigation of the subject, I hope your correspondents will excuse any observations I may make in reference to their communications.

The practical and clear manner in which Mr. Cubitt's experiments are described,* render them particularly valuable, and I read them with the greater pleasure from the fact that the result as regards the action of the tensile bars corroborates my own conclusions, published in the *Mechanics' Magazine*, No. 1260, page 334.

In considering the action of these rods, we must observe, that, as ordinarily applied, they must be considered as an integral part of the girder, and calculations of the force existing in them must bear reference to the neutral axis of the girder.

For if ABCD be a girder, *abed* the neutral axis of that girder, the portion *a*B which is above the neutral axis, will, on the application of a load, be compressed, and the part D*d* will be extended, but the bar A*b*E is partly above and partly below the neutral line, therefore it will have both a compressive and a tensile force to resist, compressive in the part A*b* and tensile in the part *b*E, and the difference of these forces is the force which actually exists; *b*E being longer than the segment A*b*, the tensile force is probably the largest in the bar A*b*E, but if, instead of being attached at A it be carried to N, then N*o* being greater than *c*E, the compressive force would be in the excess, and therefore the bar NE would be decreased.

I cannot, however, conclude from this that the truss is useless, for it is evident (whether extended or compressed), whatever force it resists, is or ought to be so much strain taken from the girder, and should, therefore, go to support the structure, for you must bear in mind that a girder resists the action of a load by a compressive force above the neutral axis, and a tensile force below it. Hence, if the truss bars are extended by a weight on the girder, it should assist the tensile force in the girder; if, on the other hand, the bars decrease in length, they ought to assist the compressive force; in either case it should assist the girder in proportion to the strain which it bears. It is only when there is no force at all existing in the truss that it can be said to be entirely useless, though I fear in most cases it is worse than useless, from the fact of their action not being sufficiently understood, and too much dependence having been placed on them. The same observations equally apply to the compressive truss so common in buildings, &c.

The difference in Mr. Cooper's tables of experiments A and B, in last week's Builder, arises from the difference of proportion between the superficial and solid contents of the bars, which were used at the two classes of experiments. The surface of a casting cools first and then has to resist the contractive force of the interior metal in becoming solid, which has always the effect of lessening the strength of the surface metal. Some tables of valuable experiments made by Mr. Bowman were published in the *Mechanics' Magazine*, No. 1268, pages 520-23, by which it appears that the transverse strength of iron cast in a chill, and afterwards annealed, is increased upwards of one hundred per cent. This is worthy of attention.

The load borne in the experiments C was equal to twice the load which the weakest bar under trial would bear.

In conclusion, I would beg to observe that the difference in the structure of wrought and cast-iron greatly increases the difficulty of the subject, and this point requires special attention.

I am, Sir &c.,

William Dredge.

10, Norfolk-street, Strand, Dec. 13th, 1847.

* See p. 612, Vol. V.

DECORATIONS OF THE LYCEUM THEATRE.

Decorative Art Society.

A paper on the recent decorations of the Lyceum Theatre, &c., by the active secretary of the society, Mr. Laugher, and discussions on theatrical decorations generally, have engaged three meetings.

The subject was introduced with a brief recital of several opinions and suggestions having reference thereto, which originated through various papers on theatres, scenery, stage properties, and heraldry, previously read before the society and reported in The Builder, and which, it was argued, may have had some share in promoting a meritorious progress in the decorations and scenery of our metropolitan theatres. It did not appear, however, that any particular style of decoration then in existence had been recognised as perfect; but the *relievo* decorations at the Princess's Theatre had been accredited as excellent, although displaying a treatment too massive and cumbrous for a theatre of its dimensions, whilst those of the Opera House in the Haymarket, and Covent Garden Theatre had been censured mainly for the comparatively tame and ineffective result obtained by a preponderance of flat-surface paintings; and the desideratum, therefore appeared to resolve itself practically into an amount of light and shadow in the embellishments; and, further, that this is more forcibly derived by projection of surface and *relievo* ornaments.

Mr. Laugher argued, that a freedom in criticism would promote the refinement of our tastes, and, by diffusing a more correct estimation and regard for decorative art, a reform therein must be hastened. To inculcate such lessons through the medium of a theatre might displease some, but the interior decorations of a mansion do not offer equal scope for fair debate, nor, with persons assuming practical views, does a constant reference to precedents afford equal advantages with a consideration of the living progress and actions of our own times. Our theatres and public buildings, it was contended, therefore, ought to be considered proper vehicles for the education of a nation's taste.

The reader then remarked, that in the recent decorations of the Lyceum Theatre, there may be found much of progress in art to watch and carefully study, as they exhibit artistic results very superior to any of a similar character at present in any other metropolitan theatre, and undoubtedly would have an important influence in fostering a demand for that highest class of embellishment, which consists in representing animate forms in relievo. A general description of the ornamental details having been given, he observed, that the embellishments emanated chiefly from the ateliers of the artist-modeller and sculptor, while, with the exception of the fronts to the upper-most tier, pictorial art is only sparingly introduced, and that the contrast in the energy of the respective efforts of sculptured and painted decorations, ought particularly to be noticed. The excellent groups of well-modelled boy-figures clustering amidst the foliage and branches which stretch forth to support chandeliers, arranged at intervals around the theatre, have, it was said, a purport and business-like air, intelligible to all observers: and the expression in the features of the upper groups is especially appropriate to their position. The panels and medallions, containing figures in relievo, were described as works worthy of minute examination; and the foliated scroll-work, birds, beasts, and serpents, introduced upon the fronts of the boxes and friezes, were said each to possess great artistic merit. The manner in which the birds on the dress-circle are arranged with their natural enemies, such as serpents and wild cats, appearing amidst the lower *convolutions* of the foliage on which they rest, was alluded to with commendation. It was said, that nine days was the extent of time in which the whole of the relievo decorations had been prepared and fixed by the Messrs. Jackson.

The reader, in conclusion, remarked that the style adopted in the decorations of the Lyceum displays many features which have been favourites with the greatest artists in past ages. He referred to the coins, cameos, and bassi-relievi of ancient Greece and Rome, on which human figures, such as Cupids, bacchantes, &c., are ordinarily found; also to the examples of beautiful boy-figures in Raffaelle's Cartoon of "St. Peter healing the cripple at the beautiful gate," as well as the works by Donatello, Ghiberti, Brunnelschi, Titian, Il Flamingo, and others, from the fifteenth to the seventeenth century,—and particularly to Gibbons, whose skill in representing birds, &c., in alto-relievo, for applied decorations, had rendered this class of decorative art popular, down to late in the eighteenth century, evidence of which, it was remarked, might be practically gleaned from the sculptured tombstones to be met with in almost every village churchyard in England.

NON-PROFESSIONAL CRITICS.

Restoration of Wigan Church.

The parish church of Wigan is about to be restored by Messrs. Sharpe and Paley, who, considering that most of the features which it now exhibits must have been given to it in the seventeenth century, propose, in the restoration, to substitute such more appropriate details as may accord with the character of the mass of the building,—that of the perpendicular period.

This has led a writer in the *Wigan Herald* (unaware of the supposed alteration in the seventeenth century) to reprobate the architects' proposal, and they, in their turn, considering that, "an architect is the only professional man whose character is liable to be publicly attacked, without the usual remedy," have replied to him through the same channel; in the course of this they make the following remarks, the truth of which will be acknowledged by many of our readers.

"In the large and rapidly-increasing class of persons who interest themselves in the study of church architecture, but who are not professedly engaged in it, there are to be reckoned many eminent men, who have contributed largely to the stock of knowledge that we possess at the present day on the subject; and it is a satisfaction to know that the number of those who have the leisure and the ability necessary to render such contributions valuable, is daily on the increase. It is, however, natural that we should find, as is generally the case in movements of this kind, a small section of this class of a different character, consisting of the busy and ambitious few who, possessing a superficial knowledge on the subject, are nevertheless not content to tread the common path, but desire to separate and distinguish themselves from their fellow students in the eyes of the rest of the world, by publicly assuming an authority and knowledge in the matter to which they have no pretensions. Having purchased a handle to their names by attaching themselves to some society in repute, they traverse the country, occupied in *rubbing* monumental brasses, and taking notes. Unaccustomed to the use of the pencil, but ready with the pen, they are poor advisers, but powerful critics! Possessing an acquaintance of a few years' standing with the

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